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Emergency Treatment in Apoplexy: At St. Luke's Hospital, Chicago, Doctor Gilbert and the author, Geza de Takats, studied 121 patients with apoplexy between 1940 and 1946 and found 15 cases of cerebral embolism, 53 cases of cerebral thrombosis, and 53 cases of cerebral hemorrhage.

Cerebral embolism was diagnosed in patients with sudden cerebrovascular insult, who had an obvious heart lesion for the source of the embolus, or who had had previous embolic episodes in which the brain or other part of the body was involved, whose spinal fluid was clear and showed no elevation of pressure. The ages in this series of 15 patients varied from 18 to 60, the average being 53 years. The blood pressure varied from 110/80 to 210/100. Seven patients belonged to the hypertensive arteriosclerotic group and 8 to the rheumatic fever heart disease group. Of the 6 patients with cerebral emboli based on rheumatic fever heart disease, only one died, a 40-year-old male, with heart failure; of the remaining 9 patients having cerebral emboli as postcoronary complications and hypertensive cardiovascular disease, 5 died. Although this is of no statistical significance in such a small series, it appears that the prognosis is better in the rheumatic fever heart disease group.

In cerebral thrombosis, or more appropriately, cerebral softening, there are areas of malacia or necrosis in the brain as a result of stenosis or hyalinization of arterioles, an arterial thrombosis is seldom encountered. In this group of 53 patients, 9 died in the attack. To make a diagnosis of encephalomalacia - not embolus and not hemorrhage - the author and co-workers postulate a patient afflicted with cardiovascular-renal disease, moderate hypertension, and an onset which is frequently gradual. Although loss of consciousness was present in approximately one half of the patients in this series, it did not persist for many days. Increased intracranial pressure was not observed, the spinal fluid was clear, and if the pressure of the spinal fluid was elevated, it was part of the hypertensive encephalopathy. Diagnosis in this group is really made by excluding embolism and hemorrhage as the cause of the stroke. The average age of patients in this group was 60.8 years. If the patient did not die of the attack or of complicating bronchopneumonia, recovery was slow, improvement being noted in 20 and no improvement in another 20 patients. Fatalities were recorded in 13 patients (24.5 percent), all of them dying between the fifth and twenty-eighth day after the accident.

Cerebral hemorrhage was diagnosed in 53 patients; of these, 41 died within a few hours or days, a mortality of 77 percent. The average age in this group was 58.9 years, ranging from 41 to 80 years. The average blood pressure was 213/120 with extremes of from 300/150 to 120/70. Again it should be pointed out that the vascular insult itself may modify the blood pressure readings but the highest pressures can be expected in cases of hemorrhage. Only 4 patients showed a gradual onset, but even in these a deepening coma was observed. A sudden, fulminating onset was observed in 49, or 92 percent, of the



53 patients. Over two thirds of the patients had bloody spinal fluid and three fourths had bloody spinal fluid or increased spinal fluid pressure (over 160 mm. of water). In those with clear spinal fluid a second tap done four or five days after the original insult may reveal red cells, frank blood, or increased pressure in patients with a slow leak of their intracerebral hemorrhage into the ventricular system or to the surface of the brain. Of these 53 patients with hemorrhage, only 9 percent improved; 14 percent were unimproved, and 77 percent died.

Knowledge regarding the vascular phenomena in the cranial cavity following a stroke is based on studies in animals with a transparent window in the skull, on occasional operative findings in man, and on a huge mass of post-mortem observations. The most clearcut evidence of a vasomotor storm is found after an experimental embolus; the vessels of the pia are seen to contract around the embolus. Interestingly this does not occur in air-embolism, but only in thrombo-embolism. Small cerebral emboli are often seen in patients with rheumatic heart disease who are in fibrillation or in patients with intraventricular thrombi following myocardial infarction.

Patients with so-called cerebral thrombosis really seem to have a gradual narrowing and sclerosis of their cerebral vessels; the ischemic areas of the brain undergo softening. The areas of malacia get a slight blood supply through the main channel and some collateral channels, which exist in the brain just as elsewhere. When blood pressure falls during sleep, in shock after a coronary occlusion, after a pulmonary embolus, or during a surgical operation, the partial anoxia becomes total, and signs and symptoms of a cerebrovascular accident occur. In this softened area hemorrhage may occur through diapedesis.

Rupture of a normal vessel can hardly occur with blood pressures of 300 millimeters of mercury. For rupture of an artery and hemorrhage, it is necessary that the wall already be weakened by hyalinization, aneurysm formation, or such increase in fragility that sudden fluctuations of pressure produce petechiae or coalescent hemorrhages. The Rumpel-Leede test for capillary fragility is surprisingly often positive in late stages of hypertension, in avitaminosis, in allergies, in chronic alcoholism, and many other states.

Because it seems that rutin favorably influences diabetic retinopathy with hemorrhages, its administration to patients suffering from cerebral hemorrhage may have preventive value. Because 20 percent of 1,200 hypertensive patients showed increased capillary fragility, at least this group should get rutin for prophylaxis of cerebral hemorrhage.

There may be, of course, other reasons for acute cerebral anoxia, such as a long-lasting nitrous oxide anesthesia with insufficient oxygen supply, or a prolonged operation on an exsanguinated individual, on a blue baby, or hypertensive



patient used to higher pressure. Involvement of cerebral circulation must be considered in long-lasting operations with or without profound loss of blood.

In the majority of vascular accidents, the cortex itself may only be involved in collateral edema and produce flaccidity. Flaccidity followed by spasticity means the disappearance of cerebral shock and is the expression of the actual organic damage. In the author's therapeutic attempts this phenomenon is of significance. The internal capsule is supplied by the perforating branches of the middle cerebral artery, which have been compared to the bristles of a beard. These are the vessels most frequently involved in a cerebrovascular accident and, depending on the extent of hemorrhage or softening, there will be contralateral hemiplegia, sensory changes, facial changes, and sometimes ipsilateral involvement.

The earlier treatment is begun in cases of apoplexy the better are the chances for hastening restitution. A brief cardiovascular and neurologic examination is done and the history is obtained from the relatives. The patient is immediately placed in an oxygen tent; this not only helps his anoxia but may indirectly aid his aortic depressor and carotid sinus reflexes. If signs of increased cerebrospinal pressure are dominant, a spinal tap is done and spinal pressure is measured. Frank blood indicates cerebral or subarachnoid hemorrhage. Marked hypertension with signs of increased venous pressure in the neck requires venesection, which is done slowly, not more than 300 cc. of blood being removed at one time. Unless coma is deepening and a terminal condition is obvious, and if massive hemorrhage can be reasonably excluded, a sympathetic block is performed with the patient in the reclining or semi-sitting position in his bed.

For diagnostic and therapeutic purposes the author and co-workers have generally preferred the anterior approach to the sympathetic chain. The method used is as follows: the patient's neck is slightly hyperextended by placing a small pillow under the shoulder blade of the same side; the head is turned away from the site of injection. With an applicator dipped in iodine, a line is drawn from the mastoid process to the clavicle, through the tips of the palpable transverse processes. A dermal wheal with one percent procaine (without epinephrine) is placed over the tip of the seventh transverse process. A 4-inch (9 cm.) 22-gauge needle is inserted through this wheal. It must shortly make contact with the tip of the transverse process, which is quite superficial. Then the needle is moved along the superior border of the transverse process until it contacts the body of the sixth cervical vertebra. Aspiration is now made for air bubbles, for blood, and for spinal fluid; if this is negative, 10 cc. of one percent procaine solution are injected, aspirating repeatedly during this procedure.

A successful block must be followed within from 10 to 15 minutes by a Horner's syndrome, by a dilatation of the conjunctival vessels, by a dryness



and increased warmth of the face and ear lobes on the injected side, and by a rise in temperature and dryness of the corresponding upper extremity. Unless a Horner's syndrome develops, the injection must be regarded as faulty and should be repeated.

This cervical injection is done on the side of the lesion. The side of the lesion is not immediately obvious when the patient is seen quite early because he may be quadriplegic and have a flaccid paralysis, though either a facial involvement or a beginning sensory change may point to the side of involvement. Dilatation of the pupil is more frequent on the contralateral side. Loss of pupillary reaction is again more frequent in hemorrhage.

If improvement is to follow cervical sympathetic block, it should be noticed within the next ten minutes. The improvement may then continue and should a relapse occur, the patient must be reinjected. The author and co-workers have not given these injections more often than once every twenty-four hours, but they might be given even from 8 to 12 hours apart if improvement is followed by signs of deterioration.

A total of 105 injections have been given to 50 patients. More than half of these patients received only one injection because at first the importance of reinjecting the patient if the first injection seemed useful was not apparent. It is now customary to inject the cervical sympathetics daily until no further improvement is noted. Although it seems that bilateral sympathetic block is more effective in animal experiments, no such injections were made in these patients.

Gradually the author and co-workers have come to recognize the fact that, at least in the big cities, the patient must actually be in the hospital for some other reason when the cerebrovascular accident occurs so that the injection can be given immediately. Of the 5 patients injected within the first hour, one was a visitor, one a blue baby who developed a hemiplegia during the exposure of the tetralogy of Fallot, one was in the hospital for a coronary occlusion, and two had had previous peripheral emboli.

In spite of the theoretical considerations which made it seem unlikely that the temporary elimination of vasomotor tonus of the cerebral vessels would effectively influence the deranged cerebral circulation following apoplexy, clinical observations leave no doubt that in properly selected patients injected at the earliest possible moment, an acceleration of the phase of restitution may be expected. By this the author and co-workers mean that in all cerebrovascular accidents, surrounding the ischemic or hemorrhagic infarct, there exists a zone of stasis, vasoparalysis, and exudation of plasma. This has been seen by Villaret and Cachera through a window in the skull in the experimental animal. These workers also demonstrated the development of a collateral network around the infarcted areas and the existence of segmental spasms and dilatations



in the nonobstructed vessels. It was shown that these functional changes must be activated by an irritative sensory lesion of the obstructed vessels because air-embolism, although producing complete vascular block, never was accompanied by such phenomena. The observations of Villaret and Cachera, however, relate to the vessels of the pia which are known to have more vasomotor control than those of intracerebral vessels.

Another observation which indicates the widespread cerebral damage a great distance from the original lesion can be found in the histologic studies of Evans and Scheinker who found diffuse cerebral atrophy accompanying focal injuries in head trauma. They reported that the white matter stands the collateral edema and stasis much more poorly and that the hypoxia here is followed by diffuse gliosis. Although recently there has been a tendency to minimize the importance of cerebral swelling in concussions, the accurate measurement of White, Brooks, Goldthwaite, and Adams showed that edema and congestion are present, due to extravasation of fluid through permeable anoxic capillary membranes.

The question then arises, can sympathetic block relieve such stasis by (1) releasing the arteriolar spasm proximal to it, (2) improving venous drainage and thereby also decreasing intraventricular and intraspinal pressure, or (3) by so affecting the extracerebral portion of the carotids that more blood may be brought to the brain.

Additional evidence that sympathetic block radically changes the function of the brain following a vascular accident is provided by electro-encephalograms taken before and fifteen minutes after a successful block in a case of cerebral thrombosis. In the tracings presented, the slow foci in the left frontal, right frontal, right temporal, and right anterior temporal leads had all been accelerated and had taken on a normal pattern.

The following therapeutic measures seem indicated in acute cerebrovascular accidents:

In patients with cerebral embolism, an oxygen tent, medication for slowing of rapid fibrillation, stellate block, and anticoagulants are ordered. Dicumarol may be kept up for weeks and months. In patients with cerebral thrombosis, an oxygen tent, venesection in case of hypertension, stellate block, and release of increased spinal fluid pressure are indicated. In patients with cerebral hemorrhage, an oxygen tent, slow spinal drainage, and neurosurgical consultation for possible evacuation of clots may be considered; no sympathetic block need be done.

In all three varieties of apoplexy, hypertonic sucrose or concentrated albumin with from 5 to 7 and 1/2 grains of aminophylline given intravenously should improve the cerebral edema. There is some evidence that aminophylline



lowers spinal fluid pressure and its use seemed more rational than the extreme dehydration advocated in patients with cerebrovascular accidents or with head trauma.

An embarrassed cerebral circulation is greatly handicapped if the oxygen exchange in the lungs is diminished. It is not enough, however, to place the unconscious or slightly cyanotic patient in an oxygen tent and leave him in the half-sitting position. Mucus and bronchial secretions collect in large quantities in the tracheobronchial tree in a patient with apoplexy, just as in one with head trauma. It is likely that in apoplexy, just as in pulmonary embolism and in reflex pulmonary atelectasis following chest trauma, this wet lung is the result of vagal stimulation, which, in the case of apoplexy is of central origin.

Because the majority of patients who survive the first forty-eight hours of the apoplectic insult die of pneumonia, postural drainage of the tracheobronchial tree is an important and much-neglected measure in the unconscious patient. The patient is placed on his side, rather than on his abdomen, and the foot of the bed is slightly elevated. Mucus may be aspirated from the mouth and pharynx through a No. 14 French catheter. A metal airway may be inserted if necessary. Aminophylline and atropine may be used if secretion is excessive. It is remarkable how good postural drainage and some pharmacologic inhibition of bronchial obstruction and secretion may clear up neurologic signs due to anoxia and prevent the greatest single cause of mortality.

If after twenty-four hours the patient is still unconscious, parenterally administered fluids are substituted by hourly feeding through a Levine tube, keeping the patient's protein and vitamin requirements in mind. Dehydration, as practiced so extensively at one time in cases of head injuries, need not be carried out, and a fluid intake of from 2,000 to 3,000 cc. of liquids should be maintained. Twenty-five percent albumin intravenously gives excellent nourishment and is more useful against the wet brain than glucose or sucrose injections.

Overdistention of the bladder in the stuporous patient should not be allowed to persist; both retention and incontinence are encountered. The wet soiled linen greatly contributes to the occurrence of decubitus ulcers.

Stuporous or unconscious patients require no sedation. Restless patients may have phenobarbital from 1 to 3 grains, bromides from 20 to 40 grains, chloral hydrate from 20 to 30 grains or, paraldehyde from 1 to 3 drams per rectum. For patients with severe restlessness or delirium, intravenous pentothal or amytal may be needed. Narcotics are to be avoided for several reasons; their miotic effect prevents the development of localizing eye signs, they depress the activity of the respiratory and cardiovascular mechanisms, they increase intracranial tension, they may exert undesirable side effects on the gastro-intestinal tract, and finally as sedatives they do not calm the patient any



more than the above mentioned less noxious agents. Generally speaking the apoplectic patient should have the benefit of treatment developed by neurosurgeons in cases of head trauma. These principles have not been consistently applied to the patient suffering from strokes.

As Aring pointed out, every case of massive cerebral hemorrhage above a certain size is fatal. The mortality in the present series was 77 percent; here is a neurosurgical problem which needs to be attacked before the blood reaches the intraventricular system. Ventriculograms and arteriograms may be helpful in localizing the hemorrhage. The indications and results of such clot evacuations in cases of spontaneous intracerebral hemorrhage are yet unknown. (Postgrad. M., March '49)

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Evaluation of the Various Clinical Signs of Thrombophlebitis: In order to be reasonably sure of the diagnosis of thrombophlebitis, the author has included in this report only those cases in which at least three of the following signs and symptoms were present: swelling, vessel tenderness, pain, increased temperature in the limb, dilated superficial veins (unilateral), cyanosis (unilateral), pulmonary embolism (reasonably proved), and change in temperature and pulse (otherwise unexplained). Patients in whom there was only swelling unilaterally or pulmonary embolism were followed but not included in this series. In 3 instances, patients with pulmonary embolism alone developed symptoms of thrombosis in from 4 to 5 days and so were included.

This study includes 92 patients in the University of Minnesota Hospitals who were examined and followed by the author in the period from May 1945 to January 1948. In these 92 patients, there were 105 extremities with deep thrombophlebitis and in some instances with superficial thrombophlebitis as well. The author and co-workers believe that the bland as well as the frankly inflammatory venous thromboses of the lower extremities may practically all be called thrombophlebitis.

Swelling occurred in 93 or 88.5 percent of the extremities. It was accompanied by tenderness in 60 extremities and by heat in only 42 instances. Swelling, heat, and tenderness occurred in 35 extremities. In most instances, swelling was quite apparent but in some cases could be determined only by measurement. Swelling of the genitalia usually occurs when there is involvement of the common iliac vessels occluding the hypogastric vein or higher. There were 6 instances of swelling of the genitalia. In 3 instances involvement of the iliac vessels was proved at postmortem examination.

Tenderness occurred in 79 or 75 percent of the extremities. Deep calf tenderness is elicited by pressing between the gastrocnemius muscle bellies



in the calf (Fig. 1). It was found to be the most frequent and consistent of deep vessel signs, being present in 70 or 66.55 percent of the extremities

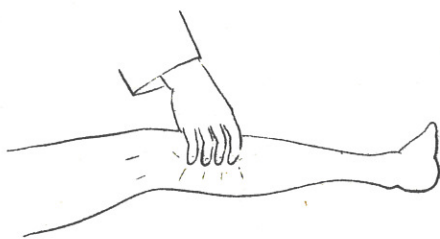


Fig. 1. Maneuver to elicit deep calf tenderness.



Fig. 2. Calf-squeeze maneuver.

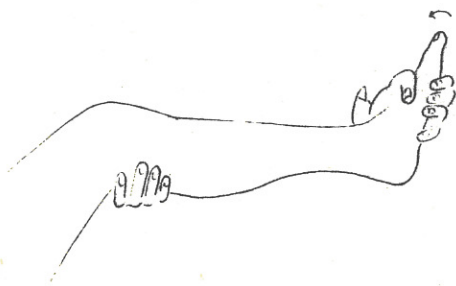


Fig. 3. Homans' maneuver of passive dorsiflexion of the foot to elicit calf pain.

examined. Calf-squeeze tenderness is elicited by gently squeezing the calf from side to side (Fig. 2). Its value has been stressed by Moses. Although probably not as significant as deep calf tenderness it is an important maneuver in substantiating deep vein involvement when used with the deep calf pressure. It was found in 56 or 53 percent of the extremities. Calf-squeeze and deep calf tenderness together occurred in 50 or 45.5 percent of the extremities.

Homans' sign is the presence of pain in the calf elicited by passive dorsiflexion of the foot (Fig. 3). In all of these maneuvers for deep vein tenderness, one must remember to keep the knee flexed thereby relaxing the calf muscles. Homans' sign was found to be positive in 52 or 49.5 percent of the extremities. Aside from the fact that this sign is the least frequent of those mentioned here, the author and co-workers believe that it is much less reliable for routine examination because of the great possibility of its being positive in the presence of simple muscle involvement alone. It involves mostly muscle stretching and deep vein pressure only secondarily, whereas the calf squeeze and especially the maneuver for deep calf tenderness in-

volve more direct pressure over the vessels in question (mainly the posterior tibial and calf veins where most thromboses probably begin). **Popliteal** tenderness was found in only 17 instances and never without other tenderness. This would lead one to believe that it is of limited value as a diagnostic sign.

Anterior tibial tenderness was found in only 2 instances. Involvement of the anterior tibial veins in thrombosis is not frequent but has been found to be present in a number of instances. This was indicated by fairly definite venographic studies done by the author in patients with chronic deep thrombophlebitis and in a few of the patients in this series. The infrequency of anterior tibial vein involvement might be due to the fact that these vessels do not drain large venous lakes as do the posterior tibials from the calf muscle group. Frykholm



has proposed that collapse of veins with contiguity of vein walls is a causative factor in thrombosis of the deep leg veins in bedridden patients. The anterior tibial vessels are protected from such pressure by their anatomical position.

In 3 patients the tenderness shifted from the calf to appear in the femoral canal area without involving the intervening popliteal area. These cases may represent the syndrome described by Homans in which a thrombus originating in the leg later attaches in the femoral region or higher and unless the vein wall between the two areas is involved with the thrombus there is no tenderness.

Profunda femoris involvement, frequently overlooked, has been emphasized by Homans. It is elicited by grasping the biceps femoris muscles and squeezing moderately. In none of the 12 patients of this series with profunda femoris tenderness was its presence the only sign of tenderness in the extremity. Though it is possible that such a thrombosis might exist alone, the author's observations to date indicate that its presence alone is rare.

The author has found that a temperature difference of from 3 to 4 degrees F. can be determined fairly consistently by simple palpation. Except for a few instances, in which an electrothermocouple was used, increased heat was determined by palpation and only definite temperature differences are included. In 54 instances or 53 percent there was an appreciable temperature increase in the affected limb. Increased heat was usually accompanied by tenderness (42 extremities) and swelling (42 extremities). However, there were many instances of swelling without heat (38 extremities). This latter figure includes the acute phlegmasias in which the limb was actually colder. Even with these cases excluded, the incidence of swelling of an extremity without heat is still fairly high (27 instances).

Pain was present in 54 patients at rest. Many more had pain in the calf only on walking. A few described their discomfort on walking as tightness rather than pain. This symptom was noted especially in patients in whom the level of the thrombosis was high, as in the iliofemoral thromboses. These patients complained of tightness in the thigh as well as in the calf.

The dusky color often described as a concomitant of thrombophlebitis was noted in only 4 of these cases. There were 5 extremities which were definitely redder than their mates. One of these was the case of suppurative phlebitis. In the 11 patients with phlegmasia alba dolens the limbs were pale.

The presence of dilated superficial veins is sometimes of use in making a diagnosis of deep vein thrombosis. This finding was noted in only 3 patients in this series. It probably is indicative of thrombosis above the common femoral when the long saphenous bears a great burden of the venous drainage or when its



entrance into the femoral vein is also occluded, so that the pressure in it is elevated. This dilatation disappears as soon as ample additional collaterals are established; with bed rest in the Trendelenburg position and with the administration of anticoagulants, this ordinarily has taken no longer than 48 hours. From the author's experience with patients studied prior to this series and subsequent to it, he and his co-workers believe that dilatation of the superficial vessels occurs at least twice as often as recorded here.

It has been claimed by Birger and Bauer that if one could stop a thrombosis from progressing above the popliteal level, patients could be assured of a much brighter future as far as complicating factors such as persistent edema and stasis changes are concerned. An attempt was made to determine the level of thrombosis clinically. When a patient was found to have ankle or leg edema, it was thought, unless there was indicative tenderness higher, that the patient's level of thrombosis was probably the posterior tibial vein. The thrombus might extend into the popliteal vein or higher, but was probably not occluding its lumen. There were 58 such extremities, the left leg being more often involved than the right.

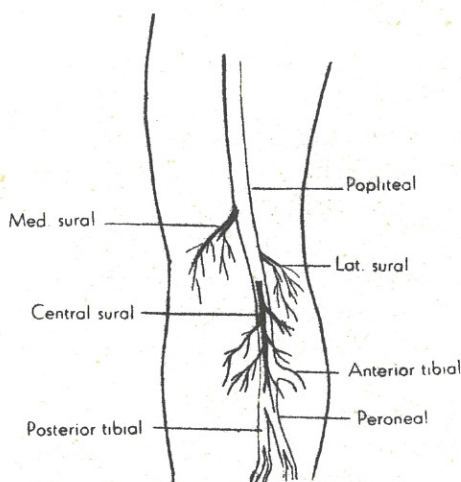


Fig. 4. Example of sural vein distribution (from dissections on amputated extremities by the author).

The sural veins drain the posterior muscle group of the leg. In 2 patients a simple sural vein thrombosis was found with surrounding induration of the calf (Fig. 4). These thrombi can often be felt on one or both sides of the upper calf just below the knee. Sural vein thrombosis should not be treated lightly and is as important as any other deep thrombophlebitis or thrombosis, for such thromboses generally progress to involve the popliteal vein and upward. Many of the patients with deep thrombosis had induration of the calf, probably due to a blocking of the sural veins as they enter the popliteal.

There were 41 instances in which swelling of the thigh and legs usually with femoral vein tenderness up to the inguinal fold, was considered as an indication of iliofemoral thrombosis, with the thrombosis either at a femoral or external iliac level.

In the patients with swelling and tenderness above the inguinal fold into the lower abdomen and in some cases involving the genitalia (swelling), the level of the thrombus was assumed to be iliac. With swelling of the genitalia, the level was assumed to be at the common iliac with involvement or occlusion of the hypogastric.

That clinical impressions can be grossly incorrect in this disease was proved by two patients in whom clinically the level of the thrombosis was found



to be at the posterior tibial and femoral veins, respectively. At operation there was an occluding thrombus up to the level of the profunda in the former and up to the external iliac in the latter. In the latter case, it is **only** fair to say that there was dilatation of the entire superficial venous tree of the extremity but not above the inguinal fold.

The author and co-workers believe that the most indicative signs in venous thrombosis of the lower extremities are swelling, tenderness, temperature change, and pain. The high incidence of deep calf tenderness in this series leads them to rely more on this sign than on the presence of tenderness to calf squeeze or a positive Homans' sign. However, calf-squeeze tenderness and a positive Homans' sign are considered as necessary adjuncts in making a diagnosis, but when present alone they are probably not as dependable as deep calf tenderness. Color changes, dilatation of superficial veins, and increase in vital signs are helpful when present but probably not of great significance in making a diagnosis of deep vein thrombosis due to the infrequency of their occurrence. (Surg., Gynec. and Obst., March '49, D. A. Felder)

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Gastric Ulcer and Surgery: It is impossible to distinguish between a gastric or a duodenal ulcer on the basis of symptoms and the results of routine physical examination. It is only by means of a roentgenological examination of the stomach or duodenum that the site of the ulcerating lesion can be determined. Gastrosopic examination will permit visualization of most but not all ulcerating gastric lesions, but because the gastroscope cannot be passed through the pylorus with accuracy, duodenal ulcers cannot be seen through it.

Why is it important to know whether the peptic ulcer is in the stomach or duodenum? First, because there is a 20-percent chance that a gastric ulcer may be malignant there is risk in allowing it to remain; even though the symptoms may temporarily subside and the niche of the ulcer may seem to disappear roentgenographically, the ulcer may be found to be malignant later on and then it is sometimes inoperable. Second, although in recent years at the Mayo Clinic a medical regimen has been advised in about 85 percent of the cases of uncomplicated duodenal ulcer and surgical treatment in 15 percent of the cases of duodenal ulcer, removal of the chronic gastric ulcerating lesion has been recommended in from 60 to 70 percent of the cases. The operation of choice is a partial gastrectomy with the ulcer included in the resected portion of the stomach; this was done last year at the clinic in 116 cases with a surgical mortality rate of 0.9 percent. Partial gastrectomy was performed also in an additional 25 cases in which gastric and duodenal ulcers were present simultaneously; one death occurred in this group. Thus partial gastrectomy was performed in a total of 141 cases with gastric ulcers, with a surgical mortality rate of 1.4 percent.



In clinically indistinguishable benign gastric ulcer and malignant gastric ulcer, the symptoms and the roentgenographic appearance of the ulcers may be similar, and free hydrochloric acid may be present in the stomach. Approximately one third of the patients operated upon for malignant lesions of the stomach have given a history of early benign ulcer-like dyspepsia and four fifths of these have responded so well to a medical regimen that the recognition and treatment of the malignant gastric lesion was delayed many months. Under these circumstances treatment of an ulcerating carcinoma other than by surgical removal always has a tragic end.

Gray, Priestly and the author made a study some years ago of all the patients operated upon at the Mayo Clinic for cancer of the stomach. It was learned that one third had symptoms of ulcer, and that these were the first symptoms in 28 percent. But of serious consequences was the fact that four fifths of these patients with ulcer symptoms had been placed on a medical regimen with relief of symptoms and an otherwise apparently effective response. The corollary of this is that all patients with a history of ulcer should have a roentgenological examination of the stomach and duodenum. If a gastric ulcer is present and if it does not heal properly on a medical regimen or if it recurs, the patient should be given the benefit of surgical removal of the lesion, not alone because of the chance that it may be malignant, but also because the possibility that a chronic gastric ulcer will heal on a medical regimen is very small indeed. Moreover, the results of removal of the lesion by partial gastrectomy are excellent. The patients are able to eat and live normally as far as their stomachs are concerned. The author has never seen a recurring gastric or a gastroduodenal ulcer after an adequate partial gastrectomy and removal of the ulcer. Therefore, because the lesion may be malignant, because excellent results are obtained by removal of the lesion as a part of the operation of partial gastrectomy, and because the surgical risk is low, the author and colleagues favor this procedure over any other.

Based upon the author's experience in vagotomy performed on 77 patients up to January 1948 and upon the experience of others, he concludes that vagotomy alone has no place in the treatment of gastric ulceration (1) because the lesion may be malignant, (2) because of the high rate of recurrence even after excision of the ulcer and vagotomy, and (3) because, although vagotomy may relieve the symptoms of ulcer, the ulcerating lesion may persist and hence give rise either to sudden hemorrhage or unsuspected perforation. (Indust. Med., April '49, W. Walters)

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The Diagnosis of Lesions of the Breast: A growing number of patients are presenting themselves to physicians with early cancer or with benign lesions suggestive of cancer for which they need treatment or reassurance. One of the organs most frequently concerned is the breast, in which pain is common and in which lumps can be readily discovered by the patient.



The authors have reviewed the records of 250 consecutive patients with breast lesions, not due to infection, referred for surgical consultation to the senior surgeon of the Hospital of the University of Pennsylvania during 1946 and 1947. These cases should constitute a representative sample of patients with breast lesions referred by their physicians for a surgical consultation. All operations were performed by the senior surgeon or by one of the authors, and all examinations of the removed tissue were made by Dr. Robert C. Horn, the surgical pathologist of the hospital.

Approximately one fifth of the 250 patients had carcinoma, a higher percentage than would be seen by the average practitioner since this group had been screened by referring physicians. More than one half the patients had chronic cystic mastitis. Many of these were observed on physical examination to have only slight abnormalities, but the diagnosis was strengthened by a typical history of pain in the breasts during the menses. One fifth of the patients with chronic cystic mastitis had cancer phobia, and much of their physical and mental pain disappeared when they were convinced that they did not have cancer.

The average age of the patient was determined for the three largest groups, chronic cystic mastitis, cancer, and fibro-adenoma. The average age of the patients with fibro-adenoma was 30 years; with chronic cystic mastitis, 40 years; and with cancer, 50 years. Only twelve patients were males. Nine were boys in puberty or adolescence who had generalized hypertrophy of one or both breasts without other obvious disease. They were reassured and told that no operation was required unless for cosmetic reasons. Three were men over 60 years with hypertrophy. Operation was performed on two in order to rule out cancer.

In formulating ideas about the diagnosis of breast lesions, the authors have found the concept of the "dominant lump" helpful. This term is used by Stout to designate a circumscribed area in the breast different in consistency from the rest of the mammary tissue. It takes considerable practice to differentiate small thickened or shotty areas from a true dominant lump, but with experience the examiner is able to locate them with confidence.

Among the 250 patients of this series, 170 dominant lumps were discovered. Patients without dominant lumps included many with diffuse chronic cystic mastitis, several with hypertrophy of the breast, and a few with intra-ductal papillomas and miscellaneous lesions. Patients with a dominant lump were routinely subjected to operation, and the final diagnosis was made by tissue examination, except in those instances in which the aspiration of clear fluid and subsequent collapse of the mass afforded definite evidence of a simple cyst.

On physical examination, most of the cancers were described as hard, whereas the benign lesions were usually described to be of a consistency less than hard. Almost one half of the patients with cancers were seen before the



lesions had become fixed to the skin or deep tissues and before edema could be demonstrated. One cancer had produced ulceration of the skin. A helpful diagnostic sign of the fibro-adenoma was its slippability, which was found in over one half of the cases. Carcinomas and fibro-adenomas were characteristically nontender.

Sixty-five percent of the malignant lesions were in the left breast, whereas the benign lesions were equally divided. The upper outer quadrants contained over one half of both benign and malignant lesions. A bleeding nipple was encountered in 14 of the 250 patients. Although 9 of these were found to have intraductal papillomas of at least microscopic proportions, in only 2 was the lesion discovered by gross pathologic examination. Of the patients with a bleeding nipple, 5 (36 percent) had carcinoma.

The proper treatment of simple cysts of the breast is controversial. At first, the authors usually advised operation when the diagnosis of cyst was made. Later the policy of attempting aspiration of lumps which were thought to be cysts was introduced. Breast cysts large enough for aspiration were found to be rubbery in consistency and smooth in outline. Several were tender. When a previous operation had shown cystic disease, the authors felt reassured in resorting to aspiration instead of exploratory operation. The clinical diagnosis of breast cyst seemed definite enough in 30 patients to warrant an attempt at aspiration. From 8 of these no fluid could be obtained, and the patients were operated upon. In one of these, a carcinoma was found at operation. The remaining 7 patients with dry aspiration had benign lesions; 4 had chronic cystic disease without gross cyst formation, and 3 had deep-seated fibro-adenomas. In 22 instances the dominant lump was collapsed by the aspiration of clear fluid (average amount 11.0 cc.). Bloody fluid, which the authors would have considered an absolute indication for operation, was obtained in none. Twenty of the 22 patients in whom aspiration was done have been followed at frequent intervals for an average of eleven months. In 2 patients the cyst filled again, and a second aspiration was required. In the remaining 18 patients no recurrence has been noted. Two of the patients were lost to follow-up although strongly urged to return for repeated examinations. The authors do not advise the general routine use of aspiration for suspected cysts: first, because of the possibility that the patient may not return for further examination and, second, because of the possibility of spreading an unrecognized cancer by the procedure. The rare patient with both carcinoma and a cyst may be led to believe the lesion has been cured and may not return for re-examination until the carcinoma has metastasized. In one of the patients aspiration was attempted in the presence of carcinoma and could conceivably have spread the cancer although radical mastectomy was performed within a week. Nonetheless, the benefits of aspiration were usually great, especially in the dramatic relief afforded several women with cancer phobia. If aspiration is performed, a meticulous follow-up must be insisted upon, and the procedure must be performed only by those experienced in the clinical diagnosis of breast lesions. Attempts should be made to study the aspirated fluid by the Papanicolaou technic if trained personnel are available.



The authors found that it was usually difficult and often impossible to diagnose a small cancer of the breast on physical examination. Many errors were made preoperatively in this series of patients. Approximately one fourth were diagnosed incorrectly on physical examination. Of 48 malignant lesions, 10 were diagnosed preoperatively as benign. A common error was in diagnosing a small cancer as a fibro-adenoma. On three occasions a dominant lump diagnosed as lipoma was found at operation to be a small carcinoma embedded in fatty tissue. If one adheres to the rule of operating on all dominant lumps, a mistake in the preoperative diagnosis is not a serious one.

In contrast to the frequently inaccurate preoperative diagnosis, a diagnosis made at the operating table by gross examination and frozen section was almost always correct. In every case in which gross examination left the surgeon or surgical pathologist in doubt concerning the nature of a lesion, quick frozen section examination yielded sufficient information for a correct diagnosis. Radical mastectomy was performed in two cases on the basis of a gross pathologic diagnosis although the frozen section verdict was equivocal. Both tumors were subsequently proved to be carcinomas.

It is often impossible to determine the presence of carcinoma in axillary lymph nodes by physical examination unless the nodes are extensively involved. Axillary lymph node metastases were frequently overlooked even on gross examination. Of the 48 patients with carcinoma of the breast, 23 (47.9 percent) were proved to have axillary metastases. Only one half of these were recognized preoperatively; another one quarter had metastases of sufficient extent to be recognized at the operating table. Just as many incorrect diagnoses were made when the axillary nodes were palpably enlarged by a nonmalignant process. Of 22 patients thought preoperatively to have axillary metastases, only one half were shown by subsequent study to have lymph node involvement.

The key to the early diagnosis of breast cancer lies in a search for and the recognition of small and often indefinite dominant lumps. Whenever an area of thickening is localized, it must be re-examined at frequent intervals. If it develops the characteristics of a dominant lump, its nature must be determined by further study as above. In the clinical examination of the breast the ability to recognize small and elusive dominant lumps is of much greater importance than the ability to diagnose the mass correctly. (Surgery, March '49, W. T. Fitts, Jr. and J. G. Donald)

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Possibilities in Lung Carcinoma: The present method of waiting for symptoms, followed by the delay that seems to be necessary to work out the differential diagnosis, has not produced the results that the authors believe are possible with the present-day surgical treatment of primary carcinoma of the lung.



An analysis of the histories of 133 patients seen between 1932 and 1942 revealed that there was an average interval of eleven and three-fourths months between the first symptom and the establishment of the diagnosis. The average patient delayed seeing a doctor for three months. The first x-ray examination was not ordered until another three months had elapsed. The diagnosis was established five and three-fourths months later. A review of the histories of patients seen in 1947 and 1948 showed that the interval between the first symptom and the date of diagnosis had been reduced only to ten months. The average patient delayed seeing a doctor for three and eight-tenths months. The first x-ray film was ordered one and six-tenths months later, compared with an interval of three months in the earlier group. However, the diagnosis was not established until four and six-tenths months later.

The interval between onset of symptoms and diagnosis can be eliminated altogether. The growth can be discovered before it is large enough to produce symptoms. Radiologic screening of the population, now being employed to uncover cases of silent tuberculosis, can be extended further. Older age groups should be included, and the screening should be repeated each year. Early carcinomas usually produce changes in the x-ray picture that can be detected by the experienced observer, even if the tumor itself will not cast a shadow. Approximately 80 percent of the lesions are situated in a lobar or segmental bronchus, and the secondary changes in the corresponding segment or lobe, incident to partial or total bronchial occlusion, cast abnormal shadows detectable in the miniature film used for screening. There is a period during the growth of the tumor when abnormal x-ray densities develop and then symptoms appear. Part of this period of silent growth can be saved. The minority group of peripherally located tumors cast direct shadows, which, even in their early stages, should be caught in the screening process, owing to the highly rarefied normal lung field. If abnormal densities are discovered, they will require proper identification without delay. Additional x-ray studies should be arranged for immediately. Cytological examination of the sputum and of material aspirated from the bronchi (Papanicolaou technic), bronchoscopy, or even exploratory thoracotomy may be necessary to settle the diagnosis.

The risk of resection of the lung in the silent and early stages of primary carcinoma is reasonably low and is constantly being lowered. Five-year survival rates for patients treated at a time when the growth was apparently localized have been high. The extension or localization of the lesion and the pathological cell type are the most important factors in survival after resection. (New England J. Med., 31 March '49, R. H. Overholt and I. C. Schmidt)

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Autopsy Study of the Value of the Electrocardiogram as a Diagnostic Aid in 130 Cases of Myocardial Infarction: During the period in which the electrocardiogram has been recognized as an aid in the diagnosis of myocardial



infarction, there have been numerous reported instances and countless unreported cases in which diagnosis was established during life by the electrocardiogram and later confirmed at autopsy. There have been many other instances - less often reported - in which an electrocardiographic diagnosis of myocardial infarction was not confirmed at subsequent autopsy. There have, however, been surprisingly few reports evaluating the electrocardiographic diagnosis of myocardial infarction in a large series of consecutive cases.

The 130 cases in this study were those in which the patients died and were autopsied during the 3-year period from 1 April 1945 to 1 April 1948. These cases fall into 2 groups, the first group being composed of all those in which a pathological diagnosis of myocardial infarction was made at autopsy. The second group is composed of those cases in which a clinical diagnosis of myocardial infarction was made positively or was considered first among multiple diagnoses and in which subsequent pathological study of the heart failed to confirm the diagnosis. Infarctions of the auricles were not noted or recorded in review of the autopsy data, and in this article the term myocardial infarct refers to infarcts of the ventricles only.

In the vast majority of these cases no special sectioning or injection technics were employed. The autopsy diagnosis of myocardial infarction was made in most instances by observation of the gross specimen with subsequent confirmatory microscopic study. In a few instances of very early infarction only microscopic myocardial changes were present when a coronary occlusion was apparent on gross examination. With one exception in all of the cases of myocardial infarction included in this series there were infarcts of at least 1 cm. in diameter; cases in which small infarcts were seen only on microscopic study and the many cases in which there were seen multiple microscopically small infarcts or small fibrotic patches were excluded from the group judged to show infarcts. It is recognized that by routine methods very small infarcts may completely escape observation. By these criteria it was hoped to restrict the cases included to those in which the infarcts could reasonably be supposed to be diagnosed by ECG study. Unless otherwise described all infarcts extended through a full thickness of ventricular wall.

Routine ECGs taken on patients hospitalized during the period covered by this study included the 3 standard leads (I, II, and III) and an additional single chest lead taken with the exploring electrode at position 4. This lead was usually CF<sub>4</sub>, occasionally V<sub>4</sub>. When additional leads were thought to be indicated (either by the clinicians or by the electrocardiographer) these were taken either as part of the initial ECG or in subsequent tracings. The additional leads most frequently taken were multiple chest leads with the exploring electrode placed in the 6 positions commonly used today and the 3 unipolar extremity leads.

Fifty-five patients with proved myocardial infarction were studied electrocardiographically at times subsequent to the development of their infarcts.



In 52 percent of these (28 patients) myocardial infarction was diagnosed electrocardiographically. In 22 patients with proved recent anterior infarction the diagnosis was made electrocardiographically in 36 percent when only 4 leads were taken. In 5 patients with proved recent anterior infarction the diagnosis was made electrocardiographically in 100 percent when 6 precordial leads were taken. In 8 patients with proved recent posterior infarction the diagnosis was made electrocardiographically in 63 percent when only 4 leads were taken. Of 5 patients with proved recent posterior infarction the diagnosis was made electrocardiographically in 80 percent when unipolar extremity leads were taken in addition to the 4 routine ones. Sixteen patients with a clinical diagnosis of myocardial infarction were studied electrocardiographically. In 6 (38 percent) of these patients an incorrect electrocardiographic diagnosis of myocardial infarction was made; infarction according to the criteria adopted was not found at autopsy.

Based on an analysis of these records, the use of 6 precordial leads as a routine procedure appears to be of great value in the accurate diagnosis of anterior myocardial infarction and represents a considerable improvement over the technic employing only a single precordial lead. When the multiple lead technic is used, errors in diagnosis will be almost exclusively those of electrocardiographic interpretation as contrasted with errors stemming from insufficient data. The use of unipolar extremity leads appears to be of comparatively little value in the accurate diagnosis of myocardial infarction. Specifically the use of lead aVf appears to contribute little information toward the accurate diagnosis of posterior infarction. (Am. J. M. Sc., March '49, R. B. Failey, Jr.)

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An Experimental Study of the Effect of Zirconium and Sodium Citrate Treatment on the Metabolism of Plutonium and Radioyttrium: When radioelements find their way into the body they may cause radiation injury in a manner similar to radium poisoning. Internally fixed radioelements are of special concern because the amounts needed to produce injury are trifling compared with the quantities necessary to cause equivalent damage when acting as external sources of radiation. Most of the potentially dangerous radioelements are metals. The purpose of this and subsequent studies is the development of rapid, safe, and effective procedures for increasing the elimination of potentially harmful radioelements which have gained entry into the body. The magnitude and nature of the problems involved have been described by Hamilton and associates.

It has been postulated and shown that the excretion of certain metallic elements fixed in the body should be increased following the administration of relatively large amounts of the soluble salts of certain other metals. The citrate salt of Zr (zirconium) when given to rats was found to cause a considerable



increase in the urinary excretion of  $\text{Pu}^{239}$  (plutonium) and a large decrease in the amount of  $\text{Pu}^{239}$  deposited in the skeleton. The early administration of zirconium citrate to rats increased the excretion of  $\text{Pu}^{239}$  from 1 percent to 50 percent and that of  $\text{Y}^{91}$  (radioyttrium) from 25 percent to 60 percent of the injected dose during a twenty-four hour period. The amount of  $\text{Pu}^{239}$  and  $\text{Y}^{91}$  deposited in the skeleton was reduced by factors of 6 and 2.6 respectively. No significant changes in the  $\text{Pu}^{239}$  or  $\text{Y}^{91}$  contents of the feces, liver, spleen, or kidney were found. The administration of zirconium citrate to a dog five months and two and one half years after exposure to  $\text{Pu}^{239}$  was followed by a sustained increase in the excretion rate. The extent of the increase was proportional to the dose of zirconium citrate. An investigation of the effects of zirconium citrate and salts of other metals on the excretion and distribution of a large variety of radioelements is now being conducted. The present study provides a direct comparison of the very marked displacing action of zirconium citrate on  $\text{Pu}^{239}$  and  $\text{Y}^{91}$ . Because  $\text{Y}^{91}$  is a beta emitter and  $\text{Pu}^{239}$  an alpha emitter, it was advantageous to administer these elements simultaneously and to analyze for each element directly in the presence of the other without the necessity of carrying out any chemical separations.

The distribution and excretion of metals are, in many instances, greatly dependent upon the route of administration, the chemical state of the metal, and the solvent. With metals possessing colloidal tendencies these factors are even more critical. The effectiveness of zirconium citrate treatment for any one metallic radioelement may vary considerably, particularly with those having colloidal tendencies. In interpreting the behavior of cationic elements in the body it is necessary to consider their chemical properties very closely, especially those relating to the formation of hydroxides, soluble complex ions, and insoluble compounds.

A radioelement is bound to various tissues by chemical or physical forces or a combination of the two depending on the environment. The displacement process is essentially an exchange reaction. When the exchange reaction is ionic in nature then the displacing property of a cation is dependent on its concentration, valence and hydrated radius, and bodily distribution. The higher the valence and concentration and the smaller the hydrated radius, the greater is the displacing ability. The ideal cation should combine maximum displacing properties with a minimum toxicity. Furthermore, its displacing action should be sustained for long periods. Thus a metallic cation which is not destroyed by metabolic processes would be preferable to metabolizable substances such as citrate and acetates.

Some cationic radioelements are bound to surfaces by insoluble compound formation, as, for example, with bone phosphate. In a physical chemical system, and presumably under biological conditions, elements bound in such a manner can be displaced by cations which form similar insoluble compounds, the degree of displacement being dependent upon the solubility and concentration of the



displacing cation relative to the adsorbed cation. Complexing agents facilitate the removal process.

Colloids and suspended matter are often irreversibly adsorbed by surfaces. In a biological system the only safe manner for effective removal of such substances is through the solubilization action of complexing agents. The slight action of sodium citrate in elevating the urinary excretion of  $\text{Pu}^{239}$  and  $\text{Y}^{91}$  is probably due to the complexing action of the citrate ion on the otherwise undiffusible fractions of these radioelements. A large part of the  $\text{Pu}^{239}$  in blood and urine is not ultrafilterable. However, the addition of 0.001M citric acid is followed by a marked increase in the diffusible fraction of  $\text{Pu}^{239}$ , that is, the form in which it is available for excretion through the membranes of the kidney and bowel. A discussion of the action of citrate ion under physiologic conditions, and with particular reference to lead poisoning, is given by Kety. The use of complexing agents such as citrates may be of supplementary value for removing those radioelements with which they form very stable complex ions.

The deposition of the alkaline earths in the bone differs markedly from that of plutonium, yttrium, and zirconium. Thus, radiostrontium is deposited mainly in the mineral structure of the bone; Pu, Y, and Zr are concentrated in the osteoid matrix. It was not expected, therefore, that zirconium citrate would exert an appreciable displacing action on strontium in view of its marked metabolic and chemical differences. In experiments which will be reported at a later date it was found that no significant increases in the urinary or fecal excretion of strontium were observed and neither was its concentration in the liver or skeleton changed as the result of zirconium or sodium citrate administration.

The most effective procedure for hastening the removal of mobile deposits of plutonium or yttrium from the body would be to administer zirconium citrate at least twice daily over an extended period. The sooner treatment is begun, and the larger the initial dose, the greater should be the net reduction in body content, particularly in the amount deposited in the skeleton. The effect of oral administration of zirconium citrate is under investigation.

It is hoped that a correlation of the results of these and subsequent metal displacement experiments with the chemical and metabolic properties of the radioelements involved will facilitate the devising of effective procedures for removing radioelements from the body. (J. Lab. and Clin. Med., March '49, J. Schubert)

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The Prevention and Treatment of Motion Sickness - I. Seasickness: During the year 1947, dramamine (dimethylamino-ethyl benzohydryl ether 8-chlorotheophyllinate) was sent by the manufacturer (G. D. Searle and Co., Chicago, Ill.)



to the Allergy Clinic of the Johns Hopkins University and Hospital for experimental investigation of its value in the control of the symptoms of hay fever and urticaria. The drug was administered to a pregnant woman who complained of urticaria and who incidentally has suffered all her life from car sickness. Unexpectedly, the car sickness was relieved as well as the urticaria. It was possible to control the car sickness of this patient at will. A placebo failed repeatedly, but dramamine gave her complete relief if she took 50 mg. a few minutes before she boarded the streetcar.

A study of seasickness was planned and carried out on the U.S.A.T. General Ballou. This transport carried 1,366 soldiers to Bremerhaven, Germany. The voyage began on 27 November 1948 and, after a rough passage, terminated 7 December 1948. A placebo was used in adequate control groups. The dose of dramamine was 100 mg. every five hours and before retiring. Dramamine prevented seasickness in all but two of the 134 men who occupied compartment 3-E; a placebo failed to relieve the symptoms in all controls who developed true seasickness in compartment 3-F. However, the 34 men constituting the control group obtained complete relief of symptoms within one hour after receiving the first dose of dramamine. The drug gave complete relief to 14 men in compartment 4-E who developed symptoms three hours or more after the transport left New York. A placebo failed to relieve 14 men in compartment 4-F, but these men obtained complete relief one-half hour after dramamine was substituted for a placebo. Nineteen men who developed symptoms (nausea and dizziness) three hours or more after the transport left New York were relieved by a placebo. These men required no medication during the last seven days of the voyage to Bremerhaven. Among 881 men who occupied other compartments on the transport, 195 developed severe seasickness. Of these, 187 derived complete relief one-half hour after the administration of dramamine. Relapses were induced by the substitution of a placebo, but these symptoms were relieved within one-half hour after the administration of dramamine. During a period of 10 days, dramamine was given in 389 cases of seasickness. In 372 there was complete relief of symptoms within one hour after the first dose of 100 mg. Only partial or no relief was derived in 17 cases. A dose of 100 mg. prescribed every five hours and before retiring was adequate to control the most distressing symptoms. When the patient was unable to retain a capsule administered orally, he did retain and absorb the drug given rectally; the benefit derived by this method was as rapid and as complete as that derived by the oral method. No reaction to dramamine was encountered by any soldier to whom it was administered during the period of 10 days. (Science, 8 April '49, L. N. Gay and P. E. Carliner)

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The Effectiveness of Dramamine in the Prevention of Airsickness: Motion sickness caused by aircraft in flight is encountered often enough to be considered



a major problem of aviation medicine. airsickness is one of the most frequent causes of distress among airline passengers. In military aviation appreciable numbers of flying cadets are eliminated for this reason; it is not unusual for combat aircrews to be affected; and not infrequently a high percentage of airborne troops and paratroopers are more or less incapacitated by the time they have reached their destination.

The reported remarkable effectiveness of dramamine in the prevention and treatment of seasickness indicated that this drug might also be valuable in airsickness. Accordingly, in February 1949, the Air Surgeon authorized the USAF School of Aviation Medicine, Randolph Air Force Base, Randolph Field, Texas, to initiate tests.

A preliminary controlled study has been completed. As in previous studies carried out on motion sickness at the School of Aviation Medicine, the incidence of airsickness in the subjects was judged on a purely objective basis, i.e., whether or not vomiting occurred. A total of 216 subjects were tested. One half of the subjects received dramamine and the other half a placebo. The results obtained were as shown in the table.

Preflight medication	Airsick		Not sick		Total number
	Number	Percentage	Number	Percentage	
Dramamine ..	31	28.7	77	71.3	108
Placebo .....	60	55.6	48	44.4	108

Of those given dramamine, 28.7 percent became ill as opposed to 55.6 percent among those given a placebo. It was shown by the application of sequential analysis to the results that additional experimental flights as de-

scribed would result merely in further verification of the same relative difference of incidence of airsickness.

Although the results of this experimental study are not spectacular, dramamine appears to decrease the incidence of airsickness. More exhaustive studies under actual turbulent conditions are indicated. Additional research is presently under way at the USAF School of Aviation Medicine concerning the mechanism of action of dramamine and other drugs in the prevention and treatment of airsickness. (Science, 8 April 1949, B. A. Strickland, Jr. and G. L. Hahn)

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The Combined Use of Aureomycin and Dihydrostreptomycin in the Treatment of Brucellosis: Following the introduction of aureomycin by Duggar, Spink and his colleagues reported experimental and clinical studies which suggested that aureomycin, when given by the oral route, was clinically effective in the treatment of brucellosis and at the same time toxic reactions due to aureomycin were mild or insignificant. Further observations by these investigators suggested, however, that aureomycin alone was like other previously available methods, suppressive but not uniformly curative.



In view of Heilman's rather impressive studies, using aureomycin and dihydrostreptomycin in experimental animals, the authors have attempted to evaluate the combination of aureomycin and dihydrostreptomycin in the treatment of a limited number of patients suffering from culturally proved brucellosis.

Patients considered suitable candidates for this form of treatment have received aureomycin by the oral route and dihydrostreptomycin by the intramuscular route. The two antibiotics were given simultaneously and the course of treatment was continued for from 12 to 14 days in cases of acute brucellosis. The average daily dosage of aureomycin for adults was 3 Gm., 750 mg. being administered every six hours. In order that the patients should not be awakened more than once during their sleeping hours, aureomycin was usually given at 8 a.m., 2 p.m., 8 p.m., and 2 a.m. The average daily dosage of dihydrostreptomycin was 2 Gm. per day. On occasion the total amount of dihydrostreptomycin was given in four divided doses. However, satisfactory results may be obtained by administering 1 Gm. of dihydrostreptomycin at 8 a.m. and 1 Gm. at 8 p.m. The patients received no additional treatment other than rest in bed and the usual supportive measures, which included vitamin supplements. If this method of treatment is to be employed in complicated forms of brucellosis, namely, those in which there is some localizing lesion, such as involvement of the skeletal system, urinary tract or endocarditis, it is recommended that the course of treatment be extended to from twenty-one to twenty-eight days rather than for from twelve to fourteen days, which is sufficient for the treatment in acute uncomplicated bacteriemic forms of the disease.

In this study only severely and acutely ill patients have received this form of treatment. The clinical results to date have been eminently satisfactory. A brief clinical summary of 4 cases will illustrate the response to this form of treatment.

Case 1. A white man, 37 years of age, whose occupation was meat packing, had become ill two weeks before admission. He complained of severe headache and profuse sweating with chills and daily fever, with the temperature varying between 102° and 103° F. Physical examination revealed an individual who was rather acutely ill. The temperature shortly after admission to the hospital was 103° F. Agglutination tests for Brucella were positive in dilutions of 1:1,600 +. Blood cultures were positive for Brucella suis. The patient was observed for three days, and on the fourth day combined treatment with aureomycin and dihydrostreptomycin was begun. Forty-eight hours later the temperature was normal, and it remained so during the remainder of his stay in the hospital. Two blood cultures obtained while he was under treatment were negative for Brucella. After dismissal from the hospital blood cultures were obtained every week for three weeks and were found to be negative. The patient has remained in excellent health and there has been no evidence of relapse.



Case 2. A white man, 36 years of age, was a traveling salesman in rural communities. He was under medical treatment for peptic ulcer on the lesser curvature of the stomach. The medical regimen included milk with and between meals. Much of the milk which he drank was unpasteurized. His therapeutic response to the ulcer regimen had been excellent. Until four weeks before admission he had felt exceedingly well. Then he began to feel listless and to lose his appetite. He forced himself to work, however. His symptoms continued for ten days. He then began to have violent attacks of chills and fever with profuse sweating and prostration. He would have several chills during the day and usually one around 4 a.m. He had been treated with penicillin for seven days without benefit.

On admission the patient was obviously ill. Abdominal examination revealed an enlarged spleen which was palpable 2 fingerbreadths below the left costal margin. The physical examination was otherwise negative. Agglutination tests were positive for Brucella in dilutions of 1:1,600 +. Blood cultures taken on the first and second day after admission were positive for Brucella abortus.

Shortly after admission to the hospital his temperature rose to 103° F. and he experienced a chill. He was observed for twenty-four hours, during which time his temperature ranged between 99° and 103.6° F. Combined treatment with aureomycin and dihydrostreptomycin was begun at 8 p.m. the second day after admission to the hospital. He received 2 drams of aluminum hydroxide (amphojel) with each dose of aureomycin. Seventy-two hours after treatment was begun he had his last chill. His temperature subsided gradually and he felt generally improved. After three days of treatment he regained his appetite and at the time of his dismissal he was feeling entirely well. Three blood cultures have remained negative.

Case 3. A white man, 44 years of age, worked as a truck driver. Ten years before his present admission he had been seen at the Clinic because of a chronic duodenal ulcer with crater. This lesion apparently had responded satisfactorily to the usual medical regimen. At the time of admission he had been ill for approximately three weeks. His illness began with chill and fever. He experienced profuse sweating with chill practically every night. He continued to work until three days before admission. For seven days before admission he had experienced marked anorexia with some nausea and abdominal distress.

On admission to the hospital his temperature was 100.2° F. Shortly after admission the temperature was 103° F. The next day his temperature reached 104° F. and he experienced a chill. The spleen was palpable 3 fingerbreadths below the costal border and there was some generalized epigastric tenderness. Blood cultures obtained on the first, second, and third days after admission were positive for Brucella suis.



Combined therapy with aureomycin and dihydrostreptomycin was begun the afternoon of the third day following admission. Seventy-two hours after the onset of treatment the temperature reached normal for the first time and his clinical appearance was excellent. Three blood cultures for Brucella were made while the patient was under treatment and all were reported negative. Blood cultures made weekly for three weeks following dismissal were negative and the patient has enjoyed excellent health since dismissal. In spite of the fact that this patient had a peptic ulcer, he experienced no gastrointestinal disturbances while taking aureomycin.

Case 4. A white boy, 11 years of age, lived on a farm where he consumed unpasteurized milk. He came to the Clinic because of sore throat, headache, fever, and vomiting of two weeks' duration.

On physical examination the temperature was 102° F. Agglutination tests for typhoid and paratyphoid gave negative results. Agglutination tests for Brucella were positive in dilutions of 1:1,600. Cultures of both blood and bone marrow were positive for Brucella abortus.

The patient was admitted to the hospital for treatment with a combination of aureomycin and dihydrostreptomycin. At the time of admission to the hospital the temperature was 100° F., but the following day it rose to 102.8° F. After seventy-two hours of treatment the temperature reached normal. He regained appetite and strength and experienced no toxic effects from the medication. On three subsequent visits to the Clinic he has been found to be in good general health. Follow-up blood cultures have been negative.

In addition to the cases just reported, one other patient received this form of treatment and made a similarly rapid and seemingly complete recovery.

The administration of aureomycin is associated with little or no toxic manifestations although at times gastro-intestinal irritation may follow its use but is not a serious or difficult problem. The toxic streptomycin effect on the eighth nerve is markedly reduced when dihydrostreptomycin, which has the same antibacterial activity, is used.

It is not suggested that this is a specific form of treatment for brucellosis, but to date it appears to be the most effective method and, at the same time, the method which probably causes the least inconvenience to the patient and with which the lowest incidence of toxicity is associated when compared with previously available methods. (Proc. Staff Meet., Mayo Clin., 16 March '49, W. E. Herrell and T. E. Barber)

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Efficacy of the Brief Clinical Interview Method in Predicting Adjustments: In 1941 the problem of rapid psychiatric screening at the military induction center was of major concern. At that time it was suggested that there would be a day of reckoning and that a follow-up study would be the only means by which those endeavors could be evaluated scientifically. Although problems of wartime mobilization are now past, it is important that one examine critically the efficacy of rapid clinical interviews in predicting adjustments because the practicing psychiatrist occasionally is expected to make a quick decision of this nature. Industry and educational systems likewise may demand rapid screening examinations to eliminate the unfit and the potentially unfit.

On the basis of a follow-up study of 100 men inducted into the Army in 1941 as questionable soldier material, 21 proved to be failures. Of 100 men for whom successful adjustment was predicted, 5 failed. Nevertheless, these studies indicate that had the 100 men who were questionable risks been rejected, the Army would have lost 49 average soldiers and 30 outstandingly successful soldiers.

A review of clinical data recorded for borderline selectees in 1941 provided no significant criteria on which one might base predictions. The practical significance of moderate intellectual limitations and borderline psychoneurotic disorders can be evaluated only after the inductee's exposure to military service.

The author's experiences warrant the following suggestions. The psychiatrist should continue to have a place in the induction center, if for no other reason than to detect and reject the psychiatrically unfit. He should record a simple psychiatric profile rating for each man he sees. Written questionnaires, social service data and psychologic laboratory procedures have their place in the induction center, but they in no way supplant the clinical interview. They remain secondary to it and serve only as useful adjuncts. Only candidates who are psychiatrically ill should be rejected. Definition of who is ill depends on the experience and judgement of the examiner or a group of examiners. The men with potential, possible psychopathy, with a suspicious and borderline psychic state, rarely can be classified as ill. The author's experiences indicate that in the doubtful person it is worth taking a chance. The induction center serves only as the initial screening. The training center to follow provides a natural series of social, emotional, intellectual and physical hurdles. With commissioned and noncommissioned officers and medical officers trained in simple rules of mental hygiene, observation, and recognition of personality disorders, the psychiatrist will have his hands full of screening problems. It appears that a far more efficient screening can be done at this stage than at the induction center. (Arch. Neurol. and Psychiat., Feb. '49, J. A. Alta)

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The Cornell Index Used as an Appraisal of Personality by an Industrial Health Service: A knowledge of the personality pattern of the worker is necessary, to effectuate good job placement. The use of the Cornell Index, a rapid and efficient screening device used to detect neurotic illness, has been employed at the Oak Ridge National Laboratory as a survey instrument, as an adjunct to the preplacement physical appraisal procedures, as a diagnostic tool in the study of individuals presenting psychosomatic complaints, and as a yardstick of emotional stability in those workers referred by supervision because of impaired job performance.

The scoring levels used were (a) from 0 to 12 inclusive indicating the normal group, (b) from 13 to 22 indicating the mildly psychoneurotic group, and (c) 23 and over, those considered as severely psychoneurotic. A total of 2565 Cornell Index forms was completed, 94.5 percent of which gave a normal classification, the classification in 4.2 percent being considered mildly psychoneurotic, and the classification in the remaining 1.3 percent falling into the severely psychoneurotic group, according to total score.

The racial distribution of the test scores showed the white group to be significantly higher than the Negro group in the normal classification. Males predominated over females in the normal scoring group. The age group from 15 to 19 years led the other age brackets in the severely psychoneurotic class, and trailed the other significantly in the normal segment. Marital status proved to be no influencing factor in the distribution of the test scores.

Those workers who were physically qualified for any position but had minor defects placed significantly higher in the normal group, and significantly lower in both other groupings, as contrasted with those physically qualified for any position, and those physically qualified for special employment only, with certain job restrictions.

From an educational consideration, a greater percentage of those with postgraduate training placed in the normal group than did the grammar school, high school, or college graduates. Those who finished grammar school only, were significantly high in the mildly psychoneurotic category. Of the professional, clerical, operator, protective crafts, custodial, and laborer groups the protective personnel scored highest among the normal section, and custodial the lowest; the latter group attained the highest percentage among the mildly psychoneurotic, and top position in the severely psychoneurotic was occupied by the laborer group. No differences in scoring were seen between veterans and nonveterans.

Examples cited show that the Cornell Index is a valuable tool in identifying those applicants for employment who may prove to be poor work risks. The index is completed most efficiently by those who do not analyze the qualifying words and phrases used in the text form for their final nuance of meaning. Its



use by scientists at a high academic level is to be questioned, for it no longer remains a simple diagnostic instrument, but an argument in semantics. For the man-in-the-street employee, the form is ideal in scope, understanding, and simplicity. Its use as a springboard toward other diagnostic steps in the study of the emotionally impaired in industry is emphasized. It is suggested that its use in the industrial scene be limited to those who place values on interpretations of test results and not on scores, to those who realize the rehabilitative potential of the applicant for work, and to those who hold clinical documents in sacred trust as privileged communications.

Industry needs a rapid screening device, easily completed by the applicant for employment or the current employee, that can aid in the detection of the neurotically ill individual. This need is met by the Cornell Index.

A system of categorizing employees on the basis of test scores into normal, mildly psychoneurotic, and severely psychoneurotic groups is valid in so far as it offers the medical director a guiding signpost as to which employees require assistance first in the resolution of their emotional problems. A simple test procedure of this type serves the medical director as a lead in his efforts to understand the reason for absenteeism, increased injury frequency, diminished production, elevated labor turnover, worker inefficiency, and lowered employee morale when based on defects in the personality structure. The Cornell Index is recommended for use by the industrial health service when an energetic mental hygiene program seems indicated to the medical director. (Indust. Med., April '49, J. S. Felton)

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The Accident-Prone Individual: The contention of modern psychiatry that most accidents are not accidents at all but are caused largely by the victim's own disposition is but a confirmation of common observation. Strictly speaking, an accident is an occurrence, the cause of which is outside a person's control. A brick falling on a pedestrian's head is a completely accidental event, particularly if the pedestrian is not warned by a sign that such an event is likely to occur at a particular place. Most industrial, traffic, and home accidents, however, are of a different nature. The victim in most industrial, traffic, and home accidents has some active part in its causation. It is popularly assumed that he was clumsy, tired, or absent-minded; otherwise he might have avoided the accident. Scientific scrutiny, however, has established that most accidents are not favored by such simple human qualities. Certain people are prone to have more accidents than others, not because they are clumsy or absent-minded, but because of the total structure of their personality. The significant factor is not a particular isolated feature such as slow reaction or lack of intelligence but something much more basic which pertains to the totality of the person as an individual.



More than 20 years ago, Marbe, a German psychologist, established the remarkable fact that the person who had one accident is more likely to have another one than the person who never suffered an accident. Statistical studies in large industrial companies have shown that accidents are not evenly distributed among the employees; that a very small percentage of employees have a very high percentage of the accidents. One might conclude from this that possibly those employees who have more accidents are those whose assignments are most dangerous. That this is not so, however, is demonstrated by the fact that those persons who have the most accidents in one kind of a job also have the most accidents in other kinds of jobs. Moreover, those employees who have the worst accident records in their jobs have also the most frequent accidents at home or on the way to work. In a study of motor vehicle accidents in Connecticut it was established that over a 6-year period as few as 3.9 percent of the drivers involved in accidents had as many as 36 percent of all of the accidents.

One large company which employs a large number of truck drivers became concerned about the high cost of its automobile accidents and tried to analyze the causes of accidents in order to reduce the frequency. Among other procedures, the company examined the accident records of each driver, and finally transferred those who had the most accidents to other occupations. By this simple device it succeeded in reducing the accident rate to one fifth of the original level. The most interesting fact in this study is that the drivers who had a high accident rate retained their accident habit in their new occupation.

It was discovered that the total personality structure was to be held responsible for the accident-prone individual. Dunbar, who, with the modern methods of psychiatry studied a large number of patients with fractures, describes the accident-prone person as follows: he is decisive or even impulsive, concentrates upon immediate pleasures and satisfactions, and is apt to act upon the spur of the moment. He likes excitement and adventure; he does not like to plan and prepare for the future. A large number of persons with the accident habit have had a strict upbringing and have derived from this an unusual amount of resentment against persons in authority. Briefly, they are men of action and not of planning, persons who do not interpolate much deliberation and hesitation between impulses and their actual execution. This impetuosity may have various reasons, but apparently rebellion against restrictions by authority and all forms of external coercion is its most common origin. The accident-prone person rebels not only against external authorities but against the rule of his own reason and self-control.

Intensive psychoanalytic study of a few cases has allowed an even deeper insight into the intricacies of the emotional life of the accident-prone person. Particularly revealing were studies which scrutinized the emotional state of the person immediately before his accident. Dunbar, Menninger, Ackerman, Rawson, and others have shown that in most accidents there is an element of intention, though this intention is by no means conscious.



Psychoanalytic investigations have revealed the nature of the unconscious motives which induce people to act in a way which invites accidents. The most common motive is a sense of guilt which the victim tries to expiate by self-imposed suffering, through self-imposed punishment. The unconsciously induced accident serves this purpose. Ackerman quotes the following case which will serve as an illustration:

"A youth was driving his mother on a shopping tour. He begged her for the use of the car for a fishing party the following day. She refused, whereupon he fidgeted angrily, 'addidentally' stepped on the accelerator and sent the car into a ditch, injuring both himself and his mother."

The combination of revenge and guilt was obvious in this case. This young man punished his mother, but at the same time he punished himself.

According to Rawson, 60 percent of persons suffering from fractures, when studied psychiatrically, confessed guilt and resentment in their relationship to some person in connection with the accident. The basis of this strange combination of emotions is a deeply ingrained attitude prevalent in our present civilization that suffering expiates guilt. If the child does something wrong he is punished. Through the suffering caused by the punishment he makes up for his guilt, and thus deserves and regains the love of his parents. The same emotional attitude is at the basis of our criminal procedure. The offender serves his punishment, after which he can return to the community as a free person who has expiated his wrongdoing. The human conscience applies this same principle within the personality. The conscience acts as an internal judge who demands suffering for our wrongdoings. Suffering relieves the pangs of a guilty conscience and restores the inner peace.

The most common causes of guilt feelings in children are hostile, rebellious impulses against the parents. The accident-prone person retains his childhood rebellion against persons in authority even in his later life. He also retains the guilt reactions originally felt toward his parents. The combination of these two, resentment and guilt, is the most common factor in accidents. Those who have a great deal of this self-punitive urge constitute the majority of the accident-prone individuals. The guilt feelings are convincingly revealed in the frequent questions of the sufferer right after his accident, "Why did it happen to me? What did I do to deserve it?" These questions show that the guilt feeling, although not quite conscious, is vaguely sensed by the patient.

Occasionally there are other unconscious motives at work in the causation of accidents, such as the wish to avoid responsibility, the wish to be taken care of, even the desire for monetary compensation. There is also some evidence of a correlation between accident proneness and certain isolated faculties, such as side vision, and low blood pressure.



Because the major factors in accidents are not external, such as defective machinery or unfavorable conditions like weather, darkness, and so forth, but lie in the person who has the accident, primary measures must be directed toward the person. There are only two effective ways to approach this human factor: one is to change the individual and the other, to take the accident-prone person away from those occupations in which the danger is great. Both measures require reliable methods by which the accident-prone individual can be spotted. Because the psychological factors which predispose an individual to accidents are not simple isolated qualities, they cannot be detected by the usual methods of psychological testing. The psychiatric interview, conducted by an expert, which reveals the whole previous life of a person is the most, if not the only reliable method. The accident habit develops early in life and manifests itself in the youngster in a noticeable inclination to contract physical injuries, even if only minor. Also, the combination of excessive resentment and guilt manifests itself in early childhood in various ways familiar to the trained psychiatrist.

To alter such an ingrained emotional pattern as is characteristic for the accident-prone individual by psychotherapy is a major therapeutic task. It requires prolonged treatment and is, therefore, in the present state of psychiatric facilities, of no practical significance. The recognition of the accident-prone person and his removal from occupations which are dangerous for him and for the public is, at the present, the only effective measure. (Pub. Health Reps., 25 March '49, F. Alexander)

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Vitamin E in the Treatment of Angina Pectoris: During the past two years, interest in the use of vitamin E in the treatment of various forms of heart disease has been aroused by several reports of its efficacy appearing in medical and nonmedical publications.

Vitamin E is a mixture of alpha, beta, and gamma tocopherols. These may be present in varying proportions. It is claimed that the alpha tocopherol content of vitamin E determines its efficacy in the treatment of heart disease. In no case has it been maintained that the heart disease represented either vitamin E or alpha tocopherol deficiency. Rather, it must be assumed that these substances exert a positive action comparable to other nonvitamin drugs in increasing the efficiency of the circulation. For this purpose, it is maintained that doses much larger than those that might otherwise be used are necessary for beneficial results. The alpha tocopherol content of the preparation used in this study was 50 percent, making the daily dosage 250 mg. of alpha tocopherol. This is comparable to the average dosage of the various preparations originally used by the Shutes and their co-workers in their treatment of patients suffering from angina pectoris. At present the methods of assay represent items of possible controversy in attempting to reconcile the



results of the present study with those of others who have reported almost uniform benefit in as short a period as from a few days to a few weeks.

A small, carefully selected group of patients suffering from angina pectoris were treated with 500 mg. of vitamin E (approximately 250 mg. of alpha-tocopherol) daily. These patients were studied by an exercise-tolerance test, and note was made of any subjective or objective change during the course of treatment, which varied from four to twenty-four weeks. In only one case was there even slight objective benefit. (New England J. Med., 3 March '49, I. S. Ravin and K. H. Katz)

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Examination of Medical Records of Inactive Reserves to be Considered for Promotion: A special board composed of medical **officers** of the Naval Reserve who are presently on full time active duty as Reserve Program officers in the various naval districts has just completed an examination of the medical records on file in the Navy Department of the officers of the inactive Reserve who are to be considered for selection for promotion. The purpose of this study was to estimate in the case of each officer concerned the degree of physical fitness existing at the time of transfer to an inactive status. This information was desired by BuPers to aid the selection boards, the actions of which will be greatly expedited thereby.

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Naval Intern Programs: The Navy has opened a Procurement Program which provides for the appointment of 300 qualified candidates as Lieutenant (junior grade) in the Medical Corps of the U. S. Naval Reserve for the purpose of pursuing intern training in civilian medical centers during fiscal year 1950 under the auspices of the Navy Department.

Candidates must be graduates of (or enrolled in the 4th year class) of a medical school listed as approved by the Council on Medical Education and Hospitals of the American Medical Association and must in all other respects meet the eligibility standards for initial appointment in the Medical Corps of the U. S. Naval Reserve.

Candidates must further have contracted for a rotating Internship of 12 months duration (for the 1949-50 Training Year) in a civilian hospital or medical center approved for **intern** training by the Council on Medical Education and Hospitals of the American Medical Association. Applicants scheduled to pursue straight internships and internships of more than 12 months will not be eligible for admission to the program; however, those who will be completing the second year of a 24-months' rotating internship will be acceptable.

Applications for appointment in the Medical Corps of the U. S. Naval Reserve for the purpose of participating in the Civilian Intern Program must be filed through the **Office of Naval Officer Procurement** nearest the place of residence of the candidate. The applications will be forwarded by Procurement Offices direct to the Bureau of Naval Personnel for recording and thence to the Bureau of Medicine and Surgery. The candidate's physical and professional qualifications will then be determined by a regularly convened Intern Selection Board.

All candidates will be notified of their selection or non-selection for the program. Selected candidates will be issued appointments as Lieutenants (junior grade) in the Medical Corps of the U. S. Naval Reserve and orders to



active duty at the institutions with which they have contracted for the year of training.

In accordance with a directive of the Secretary of the Navy, candidates selected for civilian internship under Navy auspices during the fiscal year 1950 (1949-50 training year) will be required to serve on active duty for a period of 24 months beyond the date of completion of the intern training.

An additional 200 internships will be provided in 16 U. S. Naval Hospitals during the fiscal year 1950. The selection of candidates for this program was conducted during October - November 1948 under the terms of the "Uniform Intern Placement Plan" established by the Committees on Internships and Residencies of the Association of American Medical Colleges and the American Hospital Association. All quotas have been filled and the program for placement of interns in U. S. Naval Hospitals for the 1949-50 training year has been closed.

A similar program will be conducted during the Fall of 1949 for the selection of interns for training in U. S. Naval Hospitals during fiscal year 1951 (1950-51 training year). The time and mechanism of application for this program will be in accord with the terms of the revised "Uniform Intern Placement Plan" as established by the organizations referred to in the foregoing paragraph.

**Internships in U. S. Naval Hospitals are rotating in character, 12 months in duration, and bear the approval of the Council on Medical Education and Hospitals of the American Medical Association.**

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Course Available in Tropical Medicine and Parasitic Diseases: The Bureau of Medicine and Surgery announces the availability of an eight months' course in Tropical Medicine and Parasitic Diseases at New York University Postgraduate Medical School beginning in October 1949. This course consists of lectures, laboratory exercises, and clinical demonstrations covering etiological agents, arthropod vectors, pathology, diagnosis, treatment, and prevention. Included will be infections caused by viruses, rickettsiae, bacteria, fungi, spirochaetes, protozoa, and helminths; nutritional diseases; tropical ophthalmology; dermatology; sanitation; and physiological problems of the tropics. The tuition fee for this course per trainee is \$250, which will be paid from Medical Department training funds.

Requests are desired from medical officers of the regular Navy who are interested in this type of instruction. Requests must reach BuMed prior to



1 August 1949 to receive consideration. No service agreement is required. Authorization orders ONLY will be provided for those selected to attend. Requests are to be submitted to BuMed via official channels and must be properly endorsed by immediate Command with particular emphasis on availability during this period of instruction. No relief will be provided for medical officers authorized to attend. (Professional Div., BuMed)

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SecNav, Op24/cj, P2-3, Serial 15P24

10 March 1949

To: All Ships and Stations

Subj: Establishment of Epidemic Disease Control Units and Malaria and Mosquito Control Unit.

1. The following activities are hereby established, each under an officer in charge:

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|--|----------|
| (a) U. S. Navy Epidemic Disease Control Unit #2<br>Receiving Station<br>Norfolk 11, Virginia   | 2970-525 |
| (b) U. S. Navy Epidemic Disease Control Unit #3<br>Marine Barracks<br>Camp Lejeune, N. C.  | 2970-250 |
| (c) U. S. Navy Epidemic Disease Control Unit #4<br>Naval Training Center<br>Great Lakes, Illinois  | 2970-400 |
| (d) U. S. Navy Epidemic Disease Control Unit #5<br>Naval Hospital<br>San Diego, California   | 2970-750 |
| (e) U. S. Navy Epidemic Disease Control Unit #6<br>Pearl Harbor Naval Shipyard<br>Pearl Harbor, T. H.<br>Mail Address<br>Navy Number 128<br>Fleet Post Office<br>San Francisco, California | 2970-575 |
| (f) U. S. Navy Malaria and Mosquito Control Unit #1<br>Naval Air Station<br>Jacksonville, Florida  | 4080-500 |



These activities are under the military command and coordination control of the commandant of the naval district in which located and are under the management control of the Bureau of Medicine and Surgery.

2. Bureaus and offices concerned take necessary action. --SecNav.

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BUMED CIRCULAR LETTER 49-37

1 April 1949

To: All Ships and Stations

Subj: Aviation Selection Tests, Information concerning

This letter, which appears in the 15 April N. D. Bulletin, states that certain Aviation Selection Test booklets are being revised and will replace the tests now in use. Those activities which hold test booklets and are responsible for administering the tests to applicants for naval aviation are directed to furnish certain information to BuMed by 1 June 1949. --BuMed C. A. Swanson

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BUMED CIRCULAR LETTER 49-38

1 April 1949

To: All Naval Hospitals

Subj: Orthopedic and Prosthetic Appliances for Retired Naval and Marine Corps Personnel and Fleet Naval and Marine Corps Reservists, Inactive.

Refs: (a) Paragraph 3056 - Manual of the Medical Department  
(b) Naval Appropriation Act  
(c) Art. 0430 - Navy Regs. 1948

1. Ref (a) is hereby modified.

2. Retired Naval and Marine Corps personnel and Fleet Naval and Marine Corps Reservists are entitled to receive orthopedic and prosthetic appliances, including hearing aids, under existing regulations, when admitted to a Naval Hospital for treatment and the device is recommended by a Naval Medical Officer as part of, and incident to, their treatment. Spectacles cannot be furnished to retired Naval and Marine Corps personnel and Fleet Naval and Marine Corps Reservists under existing regulations.

3. Servicing of hearing aids and replacement of parts thereof will be limited to the manufacturer's guarantee and will be based upon a personal relationship



with the recipient and the manufacturer only. Replacements of hearing aids will be upon the same basis as the initial provision thereof and except in unusual circumstances will not be effected within two (2) years of the initial furnishing or the last replacement of the appliance and then only with prior Bureau approval.

4. Under no circumstances will hearing aids, and repair or replacement thereof, be provided to such personnel not in an in-patient status in a naval hospital.

5. In the absence of availability of Naval Medical activities, retired Naval and Marine Corps personnel and Fleet Naval and Marine Corps Reservists, who served in either World War I or II, may be advised that they may obtain orthopedic and prosthetic appliances for service-connected disabilities from a Veterans Administration Facility after presenting a disability claim (VA Form 526) and having it adjudicated by the Veterans Administration. (38 U. S. Code, Section 706-709.) --BuMed. C. A. Swanson

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BUMED CIRCULAR LETTER 49-39

4 April 1949

To: All Activities With Medical Department Personnel Attached

Subj: Navmed-Fa, Change in Preparation of.

1. Immediately upon receipt of this letter, it is directed that Navmed-Fa cards submitted to the Bureau be prepared as original ribbon copies. The file copy to be retained by the individual activity may be prepared either on the paper Navmed-F or on another Navmed-Fa, as desired.

2. It is further directed that particular care be taken to insure that file or service numbers be reported and that they be correct and legible on Navmed-Fa as well as on other reports (Navmed-M and Navmed-N), submitted to the Bureau on individuals. Since these numbers are now used as the only means of identification of individuals in the processing of these reports, it is essential that errors and omissions be reduced to a minimum. --BuMed. H. L. Pugh

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BUMED CIRCULAR LETTER 49-40

7 April 1949

To: MedOfsCom, NavHosps

Subj: BuMed Circular Letters, Cancellation of 46-98 and 48-30.

1. The following BuMed Circular Letters are canceled for the reasons indicated:



C/L No.

REASON FOR CANCELATION

46-98

Current data being reported on the Cross Index System for Clinical Records.

48-30

In view of General Order No. 15.

--BuMed. C. A. Swanson

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BUMED CIRCULAR LETTER 49-41

8 April 1949

To: All Holders of Manual Medical Department

Subj: Diagnostic Nomenclature and List of Surgical Operations

Ref: (a) Manual of the Medical Department, Pt II, Ch 3.

Encl: 1. (HW) Joint Armed Forces Statistical Classification and Basic Diagnostic Nomenclature of Diseases and Injuries with a List of Surgical Operations, 1949 (NavMed P-1294)

This letter states that the enclosure becomes effective on 1 June 1949, gives information concerning pertinent sections of reference (a), and includes instructions related to the institution of the enclosure into use. It is also stated that the Monthly Morbidity Report (NavMed-582) has been revised in conformity with enclosure and is to be used by requiring activities beginning with the one for the month of June.

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BUMED CIRCULAR LETTER 49-42

12 April 1949

To: All Holders of the Manual of the Medical Department

Subj: Advance Change 3-12, Paragraphs 12B22, and 1398 MMD

Encl: 1. (HW) Subject Change

It is stated in this letter that the enclosed MMD advance change 3-12 (instructions concerning the security of narcotics, alkaloidal drugs, and alcoholic liquors) is effective immediately.

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NAVY DEPARTMENT  
BUREAU OF MEDICINE AND SURGERY  
WASHINGTON 25, D. C.

OFFICIAL BUSINESS

Permit No. 1048  
NavMed-369 - 5/49-27040

PENALTY FOR PRIVATE USE TO AVOID  
PAYMENT OF POSTAGE, \$300